DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 26, 2012 has been entered.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the specifics of the instrumentation amplifier as shown in Figure 5, which is referenced in claim 4, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional

replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-2 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silny et al. DE 3025955 (hereinafter Silny) in view of Ober US Patent 4,535,779 (hereinafter Ober).

Regarding claim 1, Silny discloses an active dry sensor module (Figure 1) comprising a main body having an upper surface with insertion holes formed

through the upper surface (Figure 1 and element 1) and an upper fringe protruded from the upper surface (element 7 with element 2); a cap (element 7), interlocked with the insertion hole (Figure 1 element 7); an active electrode inserted into the cap so that the active electrode is slidable relative to the cap (elements 1), the active electrode having a contactable upper surface and a resilient member with a first end contacting the lower part of the active electrode (Figure 1 element 3) installed in the main body and electrically connected to the main body (elements 3, 4 and 8 and machine translation page 1 lines 16-17); and an amplification circuit (element 5), installed in the main body and coupled to a second end of the resilient member (Figure 1), that is capable of receiving and processing a biomedical signal passed through the resilient member from the active electrode. Silny also teaches an active electrode having the contactable upper surface being slidable relative to the cap for directly contacting a portion of a scalp of a user that is using the active dry sensor module (elements 1 and 7). Silny teaches a cap shaped active electrode (elements 1), with each element being individually cap shaped.

Silny is silent on the main body being specifically hollow and is also silent on a latching protrusion protruded from a lower part of the active electrode that is capable of being latched onto a lower end of the cap.

Ober teaches a transcutaneous electrode which is placed in contact with the skin for obtaining electrical biosignals and includes a main hollow body (Figure 4 element 54) with a single uniform central internal cross section (Figure 4 element 54), which has a latching protrusion being protruded from a lower part

of the active electrode (Figure 4 the base portion of element 58, which houses the active electrode); additionally teaching a cap shaped active electrode (element 48) and a cap which is interlocked with the insertion hole (upper portion of 44).

It would have been obvious to the skilled artisan at the time of invention to combine the active electrode features of Ober, as described above, with the dry electrode sensor features of Silny in order to create an electrode that includes only a single uniformly central hollow cavity to allow for one single active electrode with an increased surface area, and a latching portion which can act as a mechanical stopper or failsafe from over-extending the active electrode towards the patient.

Regarding claim 2, Silny discloses an active dry sensor module wherein a holder (Figure 1 element 6) is fixedly inserted into an insertion wherein the cap is inserted into the holder. Silny teaches an element which serves the same purpose as the holder described in the application.

Regarding claim 8, Silny discloses an active dry sensor module wherein the resilient member further comprises a spring (Figure 1 element 3). Ober additionally teaches the resilient member to be a spring (Figure 4 element 50).

Regarding claim 9, Silny discloses an active dry sensor module wherein the resilient member biases the active electrode against a surface of a user that is using the active dry sensor module (Figure 1 element 3). Ober additionally teaches that the resilient member biases the active electrode against the surface of the user (Figure 4 element 50).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Silny in view of Ober and in further view of Smith et al. US Patent 4,202,354 (hereinafter Smith) and in further view of Atwell US Patent 4,833,422.

Regarding claim 4, Silny as modified by Ober discloses an active dry sensor module with an amplification circuit as mentioned above but is silent on the specifics of the amplifier. Smith teaches the use of an instrumentation amplifier for amplifying the biomedical signal (column 1 lines 7-15) and adjusting a common mode rejection ratio (abstract) and a pass band to generate an output signal (column 1 lines 21-27); a band-pass filter for filtering the output signal (column 1 lines 21-27); and a notch filter for eliminating a noise component contained in the output signal (column 7 lines 62-68). It would have been obvious to the skilled artisan at the time of invention to incorporate an instrumentation amplifier with a notch and band-pass filter with the active dry sensor module which has an amplifier in order to properly filter out any undesirable signals such as muscle artifacts, tremors of other galvanic current.

Atwell discloses a programmable gain instrumentation amplifier where the instrumentation includes three amplifiers that provide differential amplifier and two amplifiers to form a feedback loop (Figures 1 and 2). It would have been obvious to the skilled artisan at the time of invention to utilize the instrumentation amplifier as taught by Atwell with the amplifier system of Silny, Ober, and Smith in order to allow for optimal filtering and amplifying for the relatively weak biological signals.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Silny in view of Ober and in further view of Funderburk et al. US Publication 2008/0004512 (hereinafter Funderburk).

Regarding claim 5, Silny as modified by Ober discloses an active dry sensor module wherein the active electrode is plated with silver (machine translated document page 1 lines 15-16) but is silent on the spring being plated with gold or silver. Funderburk discloses a sensor inserter assembly which monitors various physiological signals and utilizes gold plated springs ([0118]) designed to bias the electrode towards the skin of the patient. The springs are not solely gold plated but a gold plated beryllium copper which is well known to have higher conductivity than just gold and is comparable to silver. It would have been obvious to the skilled artisan at the time of invention to utilize gold or silver plated springs as taught by Funderburk with the dry sensor module of Silny to increase conductivity and lower resistivity in order to produce better results.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Silny in view of Ober and in further view of Lundback et al. US Patent 4,646,747 (hereinafter Lundback).

Regarding claim 6, Silny as modified by Ober discloses an active dry sensor module but is silent on the active electrode having a curved upper surface capable of contacting a skin surface. Lundback teaches the use of an electrode for ECG examinations designed to attach to the skin by means of a curved upper surface on the active electrode (Figures 1 and 3 elements 1). It would have been obvious to the skilled artisan at the time of invention to utilize a curved smooth

surfaced contact as taught by Lundback with the electrode device of Silny in order to create good contact with the skin of the user.

Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silny in view of Ober and in further view of Sherwin US Patent 4,709,702 (hereinafter Sherwin).

Regarding claim 3, Silny as modified by Ober discloses an active dry sensor module but is silent on there being a headset inserted between the cap and the holder. Sherwin teaches the use of an EEG cap which is placed on a human head containing electrodes that use spring force to attach to the skin and more specifically include a headset (Figure 2 and 4 element 20) which is designed to hold the electrode assembly in place during use and so that the main body can be attached and detached from the headset (column 4 lines 23-26 and Figure 2). It would have been obvious to the skilled artisan at the time of invention to utilize a headset as taught by Sherwin with the active dry sensor module of Silny in order to stabilize the active dry electrode during use.

Regarding claim 7, Silny as modified by Ober discloses an active dry sensor module but remains silent on the active electrode having an uneven surface capable of contacting a skin surface. Sherwin teaches the use of an uneven contacting surface (Figure 4 element 32) which is designed to penetrate past the hair and contact the skin. It would have been obvious to the skilled artisan at the time of invention to utilize an uneven contacting surface as taught by Sherwin with the active dry electrode of Silny in order to have better contact and by extension improved readings.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRIAN M. ANTISKAY whose telephone number is (571)270-5179. The examiner can normally be reached on M - R 7:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Linda Dvorak can be reached on 571-272-4764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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